

REMARKS

Claims 1-16 are pending in the application. Claims 1, 5, 6 and 12 have been amended. Claims 9-11 have been withdrawn from consideration.

In the Office Action, claims 1-8 and 12-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. patent 5,699,447 (Alumot). Claims 13 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Alumot and further in view of U.S. Patent 5,982,921 (Alumot '921). These rejections are respectfully traversed. Applicants respectfully request reconsideration and allowance of the claims in view of the following arguments.

The present invention relates to a method and apparatus for inspecting the surface of an article, such as a semiconductor wafer. Referring to Fig. 4 of the present application, the inventive technique expressed in independent claims 1 and 12 comprises scanning the surface to produce a data stream 400, and dividing the data using a data formatting section (DFS) 410 into a plurality of columns 420, 422, 424 and 426. Each column 420-426 is further divided into a plurality of smaller data blocks, and each data block is processed simultaneously and independently using a corresponding processing node 430.

Regarding the obviousness rejection of independent claims 1 and 12 based on Alumot, the cited reference does not disclose or suggest the step of dividing data into a plurality of columns, or the step of dividing each column into a plurality of data blocks, or the step of providing a plurality of processing nodes for each data column, or the step of processing the data blocks simultaneously, as required by claim 1. Moreover, Alumot does not teach or suggest claim 12's data formatter for constructing a plurality of data lines, or claim 12's processing nodes, each for processing a fractional portion of each data line simultaneously and independently.

Independent claim 1 has been amended for clarity to recite the step of dividing the data into “*a plurality of columns*”. This amendment does not add a limitation to the claim, but simply clarifies the claim, since claim 1 originally recited this step as “dividing the data into *columns*”. Claim 1 has been further amended to for clarity to recite “providing a plurality of processing nodes *for each data column*”. This amendment is supported, for example at Fig. 4 of the application. Independent claim 12 has been amended for clarity to recite that the data formatter is for constructing “*a plurality of data lines*”. This amendment does not add a limitation to the claim, but simply clarifies the claim, since claim 12 originally recited that the data formatter is for constructing “*data lines*”.

It is contended in the Office Action that Alumot teaches dividing its data into a column, since sensors 46a-46g shown in Alumot’s Fig. 12 form a column. However, if this is the case, then Alumot does not teach or suggest dividing its data into *a plurality of columns*, as required by claim 1, or a *plurality of data lines*, as required by claim 12. By the Office Action’s reasoning, the sensors 46a-46g constitute only a single column or line, not a plurality of columns or lines.

Even assuming, *arguendo*, that the data from each of Alumot’s sensors 46a-46g is considered a column or a data line, thereby teaching the claimed plurality of columns or data lines, Alumot does not teach or suggest all the limitations of claim 1 or claim 12. Even if the separate outputs of Alumot’s sensors are analogized to the claimed data columns or data lines (e.g., columns 420-426 of Fig. 4 of the present application), Alumot does not teach or suggest claim 1’s step of providing a plurality of processing nodes for each data column, each processing node corresponding to a data block, or claim 1’s step of processing the data blocks simultaneously using the corresponding processing nodes. Likewise, Alumot does not teach or

suggest claim 12's "n processing groups, each comprising m processing nodes commonly connected to one of the n [data] lines", wherein the processing nodes process the data simultaneously.

It is contended in the Office Action that Alumot teaches subdividing its data into data blocks for processing, as claimed, because each of its defect detector circuits 60a-60h processes 3x3 blocks of pixels. Even if this is an accurate characterization of Alumot's disclosure, there is no teaching or suggestion in Alumot of a plurality of processing nodes for each data column, each processing node corresponding to a data block, as required by claim 1. At most, Alumot teaches only one processing node (a defect detection circuit) for each of its data columns. In other words, the data column output by each of Alumot's preprocessors 6a-6h may be said to be divided into data blocks by defect detection circuits 60a-60h. However, each defect detection circuit only processes one data block at a time, because Alumot teaches only one processing node in each defect detection circuit. In contrast, claim 1 requires a plurality of processing nodes *for each data column*, processing corresponding data blocks of the data column simultaneously.

Likewise, there is no teaching or suggestion in Alumot of claim 12's "n processing groups, each comprising m processing nodes commonly connected to one of the n [data] lines", wherein the processing nodes process the data simultaneously. At most, Alumot teaches only one processing node (a defect detection circuit) for each of its data lines. In other words, the data line output by each of Alumot's preprocessors 6a-6h may be said to be divided into 1/m of the data line by defect detection circuits 60a-60h. However, each defect detection circuit only processes one 1/m of the data line at a time, because there is only one processing node taught for each defect detection circuit. In contrast, claim 12 requires m processing nodes *for each of the n data lines*, each node processing 1/m of the data simultaneously.

Alumot does not render the invention of independent claim 1 obvious, at least because it does not disclose or suggest the claimed steps of providing a plurality of processing nodes for each data column, each processing node corresponding to a data block, and processing the data blocks simultaneously using the corresponding processing nodes.. Moreover, Alumot does not render independent claim 12 obvious, at least because it does not teach or suggest claim 12's n processing groups, each comprising m processing nodes commonly connected to one of n data lines, wherein the processing nodes process the data simultaneously. Still further, it would not have been obvious to modify the technique/apparatus of Alumot to yield the inventions of claims 1 and 12.

Consequently, independent claims 1 and 12 are patentable, as are claims 2-4, 7, 8 and 13-16, which depend from claims 1 and 12, respectively.

Regarding the obviousness rejection of claims 13 and 14 based on Alumot and Alumot '921, the Alumot '921 reference does not furnish the processing nodes required by claim 12, from which claims 13 and 14 depend. Therefore, any combination of Alumot and Alumot '921, however made, would still be missing these features of claim 12, and it would not have been obvious to add those features to any Alumot/Alumot '921 combination.

Consequently, claims 13 and 14 are patentable.

Regarding dependent claims 5 and 6, which were indicated to be allowable if rewritten in independent form, these claims are also patentable, since they have been rewritten in independent form including all the limitations of their base claim 1 and intervening claim 4.

Reconsideration and withdrawal of the rejection of claims 1-4, 7, 8 and 12-16 under 35 U.S.C. §103(a) are respectfully requested.

Accordingly, it is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicant's representative at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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A handwritten signature in black ink that reads "Michael A. Messina". The signature is written in a cursive, flowing style.

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